IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

RAGIL et al.

Examiner: Tam M. Nguyen

Serial No.: 10/042,248

Group Art Unit: 1764

Filed: January 11, 2002

Title: HIGH OCTANE NUMBER GASOLINES AND THEIR PRODUCTION USING A PROCESS ASSOCIATING HYDROISOMERIZATION AND SEPARATION

REPLY BRIEF

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Sir:

Further to the Examiner's Answer mailed on July 9, 2010, please consider the following.

The Rejection Under 35 USC § 103

Stem (US 4,982,048) discloses a process to enhance the octane of refinery gasoline blending pool.

The feed according Stem's process comprises mixed hydrocarbon stream comprising normal paraffins, mono-methyl-branched paraffins and di-methyl-branched paraffins (see column 4 line 20-23)

This process comprises **at least three compulsory and successive** steps:

- the first one is a separation step comprising passing a mixed hydrocarbon stream in a first separation zone comprising a first shape-selective separatory molecular sieve having a pore size of 4.5 x 4.5 A. The technical effect of this step is the following: two effluents are produced: one (named for example Effluent A) contains only normal paraffins and the second one (named for example Effluent B) contains a mixed hydrocarbon stream of mono-methyl paraffin, di-branched paraffins, cyclic paraffins and aromatic hydrocarbons.

- the second step which is also a separation step comprising a second-shaped-selective separatory molecular sieve having a pore size intermediate 5.5 x 5.5 to 4.5 x 4.5 A. The technical effect of this step is the following: effluent B is divided in two new effluents: one containing mono-methyl paraffins (named for example C) and the other one (named effluent D) containing multi-branched paraffins, cyclic paraffins and aromatic hydrocarbons. Effluent D is removed and passed directly to refinery gasoline pool.
- the third step is the isomerization step of Effluent A and Effluent C

So, in Stem's process only normal-paraffins and mono-methyl paraffin are sent to the izomerisation.

On the contrary, in the claimed process, the **whole** feedstock is sent to the isomerization zone (the first one when in the embodiment of the invention there are two isomerization zones), and the effluent of the isomerization step is sent to the separation zone wherein it is separated into at least two streams. Only the stream rich in straight-chain paraffins is recycled at the inlet of the izomerization zone (the first one when in the embodiment of the invention there are two isomerization zones) see Fig 2.1A, 2.2B and 2.2C of the application.

The whole feedstock is the fresh feed which contains straigh-chain paraffins, mono-branched and multi-branched paraffins, naphthenic compounds and aromatic compounds. (See [0031] and [0055] of the published application).

The technical effects of the claimed invention are, for example, the following:

- the cracking of di-branched and tribranched paraffins is minimized, which is particularly important for the C5-C8 cuts.
- lower quantities of isomerization catalyst in the isomerization zone is needed.
- the yield of di and –tri branched is improved
- the concentration of aromatic compounds is reduced without a reduction in the motor octane number

(see [0047] and [0060] and examples of the published application).

The separation step before the isomerisation step is mandatory in the Stem 's process. The Examiner's Answer only focuses to the isomerization step of Stem 's process, and ignores the remaining mandatory steps.

Stem teaches that using different molecular sieves before the isomerisation step improves the conversion of normal and mono-methyl paraffins into di-branched paraffin **(see**

column 4 line 8-12; column 8 lines 45-60).

Stem does not disclosed or suggest a process wherein a feedstock containing straight-**chain paraffins, mono-branched and multi-branched paraffins, naphthenic compounds and aromatic compounds is sent with a recycle of straigh-chain paraffin directly to a hydro-isomerization step in order to increase the yield of the di and –tri branched and meanwhile reducing the concentration of aromatic compounds without a reduction in the motor octane number.**

Stem does not disclose sending the feed directly to a hydro-isomerization section and **even teaches away from it at least for the reasons noted below:**

"This invention is to provide a unique multiple separatory sieve sequence to pretreat an isomerization zone feed stream to preserve (before isomerization) constituents within said feed, such as aromatic, naphthenes, and di-branched paraffins, *which would be diminished in value if they were passed to isomerization,"* **see Column 3 line 60-65,**

"the sieves are arranged upstream of an isomerization process to treat a feed stream to *preserve constituents in the feed stream which would be diminished in value by isomerization,*" **see column 5 lines 21-24,**

"*one of the advangeous aspects of this invention is the fact that di-methyl-branched paraffins, cyclic paraffins and aromatics are not passed to the isomerization zone. The isomerization reaction has a chemical equilibrium. The exclusion of the dimethyl paraffins from the isomerization zone is advantageous for maximizing the quantity of di-methyl paraffins produced during isomerization while at the same time, reducing the number of normal paraffins which remain unisomerized in the isomerization zone effluent stream,* " see column 9 lines 54- 63.

One of ordinary skill in the art would not have a reason to proceed contrary to the teaching of Stem in view of the strong disclosure for the requirement for separation, and due to the disclosed advantages taught as a result thereof.

The Examiner's Answer alleges that "one of skill in the art would omit the pre-treating step when a feed comprises primarily normal paraffins and only a very small amount of multi-branched parrafins." There is no basis for such an allegation based on a merely speculative scenario. An underlying premise/context of the invention disclosed in Stem is the treatment of mixed hydrocarbon streams, where certain constituents of the stream are preserved from reaching the isomerization part of the process. See, for example, column 3, lines 55-66. Moreover, the disclosure of Stem clearly teaches and requires the separation of

the multi-branched parrafins to achieve a feed stream essentially excluding the same. See the top of column 4 of Stem. It is unclear what amount of multi-branched parrafins does the Examiner's Answer considers the right amount for one of ordinary skill in the art to exclude the separation step in view of the disclosure of Stem, or whether such a stream would have been even considered by one of ordinary skill in the art in view of the disclosure of Stem. Moreover, the claims of the present application are directed to the treatment of a fresh feed not previously treated so as to separate di-branched and tri-branched paraffins therefrom. The merely hypothetical feed in the Examiner's Answer is not mindful of either the disclosure of Stem, or the claims of the present application.

The Rejection Under 35 USC § 112

The Examiner's Answer again alleges that nowhere in the specification is there a disclosure that "a fresh feed not previously treated so as to separate di-branced and tri-branched parrafins." As already discussed in the Appeal Brief, there is no requirement for literal support in the disclosure for the terminology used in the claims, yet the Examiner's Answer appears to continue to require the same.

The Examiner's Answer also alleges that a "feed comprising multibranched paraffins **does not necessarily imply** that the feed has not been previously treated to separate muli-branched paraffins therefrom." (Emphasis added.)

The test for written description is however not what something must "necessarily imply," but rather that the disclosure reasonably convey the claimed concept that applicants' invention is directed to a process wherein the feed is a fresh feed not previously treated so as to separate di-branched and tri-branched paraffins therefrom, which it does for the reasons set forth in the Appeal Brief. There is no basis whatsoever in patent law for a standard as stringent as set forth by the Examiner's Answer, and notably no citation is support of the allegation is made by the Examiner's Answer.

The Examiner's Answer in an attempt to demonstrate this "necessarily imply"-ing standard onto the disclosure sets forth a theoretical or rather speculative scenario where "if only a certain amount of di-branched and tri-branched paraffins is desired in a feedstock, a separating step would be employed to remove multi-branhced paraffins (extra di-branched and tri-branched) from the feedstock, which would still comprise di-branched and tri-branched paraffins." However, one of skill in the art would not understand from the disclosure that applicants are describing a scenario as set forth above, since no support or

disclosure is present in the application for such an understanding of the disclosure, and none are even attempted to be pointed out by the Examiner's Answer. As discussed above, no "necessarily" standard is present regarding written description, and as such, an attempt to show that the disclosure could be miss-characterized is not a showing that the disclosure does not comply with the written description requirement.

The Examiner's Answer again alleges that the disclosed atmospheric distillation step could be considered a pre-treating step. Applicants maintain their positions set forth in the Appeal Brief. The merely renewed allegation in the Examiner's Answer sets forth no new reasoning and ignores the arguments already made in the record.

For all the foregoing reasons, and the reasons discussed in the Appeal Brief, reversal of the rejections is respectfully and courteously requested.

Respectfully submitted,

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